FOCUSED SITE INSPECTION PRIORITIZATION
SITE EVALUATION REPORT

EMPIRE-DETROIT STEEL, FOX HOLLOW
3879 RHODES AVENUE
NEW BOSTON, OHIO

EPA ID NO. OHD 054 022 900

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Site Assessment Section
77 West Jackson Boulevard
Chicago, IL 60604

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CONTENTS

FIGURES

1.0 INTRODUCTION

Under Contract No. 68-W8-0084, Work Assignment No. 35-5JZZ, PRC Environmental Management, Inc. (PRC), has evaluated the Empire-Detroit Steel, Fox Hollow (EDS), site in New Boston, Scioto County, Ohio, as a potential candidate for the National Priorities List (NPL) and has prepared this site evaluation report. Karl Cunningham purchased the site property from Empire-Detroit Steel in 1982, and Cunningham Materials, Inc. (CMI), currently operates an on-site slag and steel recovery facility. Using the Hazard Ranking System (HRS), PRC performed focused site inspection prioritization (FSIP) activities for the site to determine whether, or to what extent, it poses a threat to human health and the environment. This report presents the results of PRC's evaluation and summarizes the site conditions and targets pertinent to the migration and exposure pathways associated with the site. Information was obtained from U.S. Environmental Protection Agency (EPA) Region 5 files; Ohio Environmental Protection Agency (OEPA) files; the screening site inspection (SSI) report prepared by Ecology and Environment, Inc. (E&E), the EPA Field Investigation Team (FIT) contractor; and the site reconnaissance inspection conducted on August 28, 1995 by PRC. During the site reconnaissance, PRC met with Karl Cunningham owner of CMI.

This report has five sections, including this introduction. Section 2.0 describes the site and provides a brief site history. Section 3.0 provides information about previous investigations conducted at the site. Section 4.0 provides information about the four migration and exposure pathways (groundwater migration, surface water migration, soil exposure, and air migration) that can be scored. Section 5.0 summarizes conditions at the site. References used in the preparation of this report are listed at the end of the text. In addition, the appendix to this report contains photographs taken during the site reconnaissance.

2.0 SITE DESCRIPTION AND HISTORY

The EDS site is located at 3879 Rhodes Avenue, New Boston, Scioto County, Ohio (latitude 38° 45' 31.39" N and longitude 82° 54' 44.8" W) (USGS 1975a). The site is bordered to the north, east, and west by wooded hills. Rhodes Avenue borders the site to the south. The site occupies 70 acres in a rural and industrial area 1,000 feet north of the Ohio River. The site's location is shown in Figure 1.

SOURCE: MODIFIED FROM USGS, NEW BOSTON, OHIO, QUADRANGLE, 1975a, AND PORTSMOUTH, OHIO, QUADRANGLE, 1975b

QUADRANGLE LOCATION

EMPIRE–DETROIT STEEL, FOX HOLLOW
NEW BOSTON, OHIO

FIGURE 1
SITE LOCATION

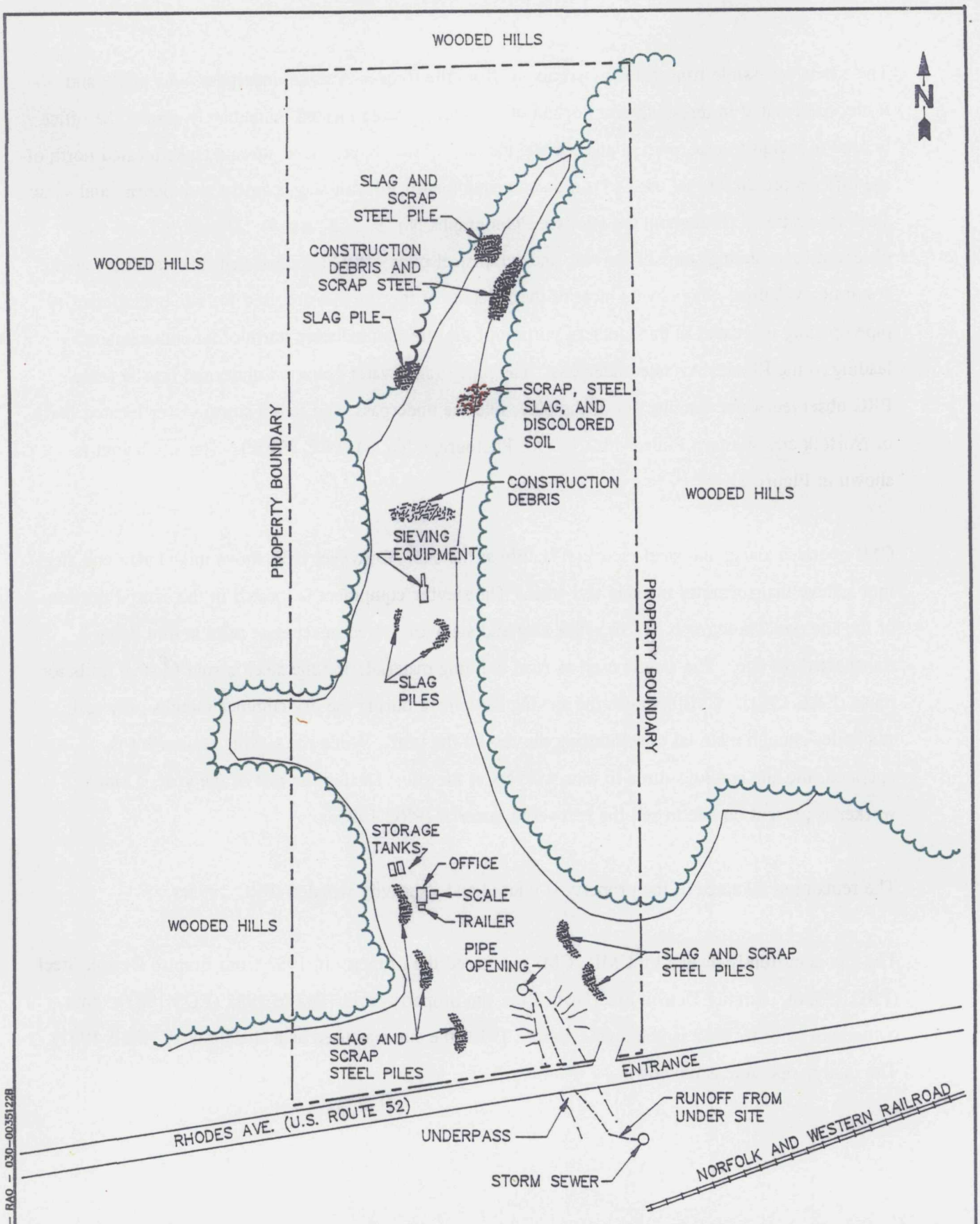
PRC ENVIRONMENTAL MANAGEMENT, INC.

The site is accessible from Rhodes Avenue or from the Rhodes Avenue underpass. An office and trailer are located in the southwest portion of the site. A scale located immediately east of the office is used to weigh trucks entering and leaving the site. Two aboveground storage tanks located north of the office store diesel fuel used to run on-site equipment. Piles of slag, construction debris, and scrap steel are scattered throughout the site (see Photographs No. 1, 2, 3, and 4). Discolored soil was observed surrounding some of the slag and scrap steel piles. PRC assumed that this staining was the result of oxidation. Slag covers most of the 20 acres of the site that are used for site operations. A pipe opening is located in the southern portion of the site, immediately north of an embankment leading to the Rhodes Avenue underpass. The pipe drains water collected under the on-site scale. PRC observed water running out of the pipe, into the underpass, and into a storm sewer located north of Norfolk and Western Railroad tracks (see Photograph No. 5) (PRC 1995c). The site layout is shown in Figure 2.

CMI operates a slag and steel recovery facility at the site. Conveyer belts move mixed slag and steel into a sieve that separates the slag and steel. The sieving equipment is located in the central portion of the site (see Photograph No. 6). The slag and steel are stored in separate piles before being transported off site. The slag is used as road building material, and the steel is sold to steel mills for reuse (E&E 1991). CMI operates the sieving equipment during the dry summer months only and stockpiles enough material to sell during the rest of the year. While the sieving equipment is operated, the site employs three to four workers at the site. During the rest of the year, a single worker is present on site to sell the recovered material (PRC 1995c).

The remaining 50 acres of the property is unused and is heavily wooded (PRC 1995c).

The site is currently owned by CMI. CMI purchased the property in 1982 from Empire-Detroit Steel (PRC 1995c). Empire-Detroit Steel owned the site property from 1942 to 1982 (EDS 1981). Site ownership prior to 1942 is unknown. Before 1942, the site was used as a shale quarry (E&E 1991). The quarry operator is unknown.



EMPIRE–DETROIT STEEL, FOX HOLLOW
NEW BOSTON, OHIO

FIGURE 2
SITE LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

Empire-Detroit Steel used the site as an open dump for slag and scrap steel from its steel mills and coking plants (OEPA 1987). Empire-Detroit Steel also reclaimed iron and steel from the on-site piles (PRC 1995c). In a Notification of Hazardous Waste Site form filed on June 8, 1981, Empire-Detroit Steel reported that 1,000 cubic yards (yd^3) of decanter tar sludge had been disposed of at the site (EDS 1981). The decanter tar sludge was generated from Empire-Detroit Steel's coking operations and is listed under Resource Conservation and Recovery Act (RCRA) hazardous waste code K087 (containing naphthalene and phenol) (EPA 1993; OEPA 1987). According to Karl Cunningham, no decanter tar sludge has ever been observed at the site (PRC 1995c). Empire-Detroit Steel also disposed of construction debris at the site (E&E 1991). According to Karl Cunningham, immediately after he purchased the site property in 1982, Empire-Detroit Steel hauled away coke that it had been storing at the site (PRC 1995c).

3.0 PREVIOUS INVESTIGATIONS

OEPA conducted a preliminary assessment (PA) at the EDS site in September 1987 and assigned a medium priority to the site for further investigation by the state and EPA FIT (OEPA 1987). No samples were collected during the PA.

E&E, the EPA FIT contractor, conducted an SSI at the site on November 29, 1990. During the SSI, E&E collected seven surface soil samples. All seven samples were analyzed through the Contract Laboratory Program (CLP) for target compound list (TCL) and target analyte list (TAL) parameters. Soil samples S1 and S2 were collected from the northern portion of the site near two slag and scrap steel piles. Soil sample S3 was collected from the northern portion of the site near a slag and scrap steel pile that had discolored soil surrounding it. Soil sample S4 was collected from the central portion of the site adjacent to the sieving equipment. Soil sample S5 was collected from the southeast corner of the site near an area where slag and scrap steel had been piled and soil staining was evident. Soil sample S6 was collected from the side of the embankment near the underpass in the southern portion of the site. Soil sample S7 was collected as a background sample from approximately 0.5 mile east of the site (E&E 1991).

The following hazardous substances were detected at elevated concentrations in soil samples collected on site: *toluene*; *naphthalene*; *acenaphthylene*; *aldrin*; *endosulfan II*; *endosulfan sulfate*; 4,4'-DDT;

cadmium; chromium; copper; lead; manganese; mercury; nickel; selenium; silver; vanadium; zinc; and cyanide (E&E 1991). The analytical results obtained from this sampling event and the sample locations are presented in Attachment A.

4.0 MIGRATION AND EXPOSURE PATHWAYS

This section describes the four migration and exposure pathways associated with the EDS site. Section 4.1 discusses the groundwater migration pathway; Section 4.2 discusses the surface water migration pathway; Section 4.3 discusses the soil exposure pathway; and Section 4.4 discusses the air migration pathway.

4.1 GROUNDWATER MIGRATION PATHWAY

This section discusses geology and soils, groundwater releases, and targets associated with the groundwater migration pathway at the site.

4.1.1 Geology and Soils

The site is located on the unglaciated Allegheny Plateau (USDA 1989). The landscape is dominated by narrow ridges and steep sided valleys (Walker and Schmidt 1953). Because the site is a former shale quarry, no natural soil remains at the site except on the steep sides of the site (PRC 1995c). Natural soil surrounding the site consists of members of the Shelocta-Brownsville and Brownsville-Rock Outcrop Series (USDA 1989). Soil from Shelocta-Brownsville Series consists of well drained to moderately well drained silty loam underlain by soils weathered from sandstone, siltstone, and shale. Bedrock is typically present at 24 to 40 inches below ground surface (bgs) under the Shelocta-Brownsville Series. Soil from the Brownsville-Rock Outcrop Series consists of silty loam and soil with greater than 15 percent rock fragments. Bedrock is typically present at 40 to 72 inches bgs under the Brownsville-Rock Outcrop Series soil, except on steep slopes where outcrops occur.

Bedrock underlying the site consists of Mississippian-aged, alternating sandstone and shale. Because the site is a former quarry, PRC assumed that slag and scrap steel directly overlies bedrock. Bedrock outcrops were seen on the slopes of the site during the site reconnaissance (PRC 1995c). Devonian-

aged Ohio shale underlies the Mississippian-aged deposits (Walker and Schmidt 1953). Boring logs from the area indicate that an average of 1 foot of silty clay or sandy silt overlies the shale bedrock (Nutting 1976). Well logs from the area indicate that the shale layer is from 6 to 80 feet thick and overlies the sandstone (E&E 1991). According to well logs, groundwater is present at 30 to 75 feet bgs, and wells are completed in either sandstone or shale (Walker and Schmidt 1953).

Regionally, the bedrock is a poor source of water and typically yields less than 5 gallons per minute (gpm) (Walker and Schmidt 1953). The major source of groundwater in the area is the thick sand and gravel alluvial aquifers that are present in major river valleys. Alluvial deposits in the Ohio River valley south of the site may yield as much as 500 gpm (E&E 1991). Groundwater flow direction is assumed to be to the south towards the Ohio River.

4.1.2 Groundwater Releases

A release to groundwater from the site has not been documented; however, no groundwater samples have been collected at the site.

4.1.3 Targets

Approximately 601 people use private wells that draw water from within a 4-mile radius of the site (Frost 1995a, 1995b). The nearest well is 0.25 to 0.5 mile from the site (Frost 1995a, 1995b). Well logs indicate that the majority of wells are screened in either sandstone or shale bedrock or alluvial material underlying the flood plains of the rivers in the area (E&E 1991; Walker and Schmidt 1953).

The City of South Shore, Kentucky, is located across the Ohio River and receives drinking water from 10 municipal wells located 3 to 4 miles west of the site that are screened in alluvial deposits in the Ohio River flood plain. Approximately 7,500 residents receive drinking water from this system (PRC 1995d). The Ohio River is located 1,000 feet south of the site and is considered a major groundwater divide.

The following resident populations receive drinking water within the indicated distance from the site: 0 people within 0.25 mile of the site; 2 people 0.25 to 0.5 mile from the site; 29 people 0.5 to 1 mile

from the site; 141 people 1 to 2 miles from the site; 195 people 2 to 3 miles from the site; and 234 people 3 to 4 miles from the site (Frost 1995a, 1995b). No wellhead protection areas are located within 4 miles of the site (OEPA 1995).

4.2 SURFACE WATER MIGRATION PATHWAY

This section discusses the migration route, surface water releases, and targets associated with the surface water migration pathway at the site.

4.2.1 Migration Route

Water from under the scale at the site is collected and diverted through a pipe that discharges immediately north of the entrance to the underpass in the southern portion of the site. PRC observed water draining from the pipe, into the underpass, and into a storm sewer located north of Norfolk and Western Railroad tracks approximately 400 feet south of the site (PRC 1995c). The storm sewers in the Village of New Boston discharge directly to the Ohio River (PRC 1995e).

The Ohio River is located 1,000 feet south of the site. The site is located outside of the Ohio River's 500-year flood plain (E&E 1991). The flow rate of the Ohio River, measured at Ashland, Kentucky, 30 miles upstream of the site, is 80,340 cubic feet per second (Walker and Schmidt 1953).

4.2.2 Surface Water Releases

No releases from the site to the surface water pathway have been documented; however, no surface water or sediment samples have been collected at the site.

4.2.3 Targets

The surface water intake for the City of Portsmouth is located approximately 2,000 feet downstream from the site. The City of Portsmouth provides water to approximately 44,000 people (PRC 1995a). The City of Portsmouth also sells water to the Scioto Water Company, which serves approximately 6,000 people (PRC 1995b).

Approximately 1.5 miles of wetlands are located within 15 miles downstream of the site on the Ohio River (DOI 1991a, 1991b). The Indiana bat (*Myotis sodalis*), a federally endangered species, is known to inhabit Scioto County and may inhabit areas within 15 miles downstream of the site (DOI 1994). According the Ohio Department of Natural Resources, Division of Wildlife the Ohio River is used for recreational activities including fishing (PRC 1995f).

4.3 SOIL EXPOSURE PATHWAY

The following chemicals were detected at elevated concentrations in on-site surface soil samples during the 1990 SSI: toluene; naphthalene; acenaphthylene; aldrin; endosulfan II; endosulfan sulfate; 4-4'DDT; cadmium; chromium; copper; lead; manganese; mercury; nickel; selenium; silver; vanadium; zinc; and cyanide (E&E 1991). Analytical results and sampling location are included in Attachment A.

No residences, schools, or daycare facilities are located on or within 200 feet of the surficial soil contamination. While sieving equipment is operated, CMI employs three to four full-time workers at the site. The rest of the year, one full-time employee is present on site (PRC 1995c). No terrestrial sensitive environments or resources are located on site. About 1,033 people reside within 1 mile of the site (Frost 1995a, 1995b). Site access is prevented by steel cables stretched across the entrances to the site. The site is not fenced, but no problems with trespassing have been noted. Access to the site may also be prevented by the very steep slopes that surround the site (PRC 1995c).

4.4 AIR MIGRATION PATHWAY

No releases from the site to the air migration pathway have been documented. No sensitive environments are located within 4 miles of the site. About 27,441 people reside within 4 miles of the site (Frost 1995a, 1995b). No vapors or odors were noted during the site reconnaissance (PRC 1995c).

5.0 SUMMARY

The EDS site was used by Empire-Detroit Steel to dispose of slag from its steel mills and coking plants from 1942 to 1982. Empire-Detroit Steel also disposed of construction debris at the site. In a Notification of Hazardous Waste Site form filed on June 8, 1981, Empire-Detroit Steel reported that 1,000 yd^3 of decanter tar sludge had been disposed of at the site; however, no decanter tar sludge has ever been observed at the site. In 1982, Empire-Detroit Steel sold the site property to CMI. Currently, CMI operates a slag and steel recovery facility at the site.

Soil samples collected by the EPA FIT in 1990 indicate that elevated concentrations of volatile organic compounds, semivolatile organic compounds, pesticides, and metals were present in on-site soils. No observed release the groundwater, surface water, and air migration pathways has been established. However, a release to the soil pathway has been established and is based on the 1990 SSI sampling event. Approximately 8,101 people receive drinking water from private or municipal wells located within 4 miles of the site. The surface water intake for the City of Portsmouth is located approximately 2,000 feet downstream of the site. This surface water intake serves approximately 50,000 people.

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PRC. 1995c. Field Logbook Notes Taken during Site Reconnaissance at the EDS Site. Prepared by Jennifer Force, Geologist. August 28.

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PRC. 1995e. Record of Telephone Conversation Regarding Storm Sewer Discharge in the Village of New Boston, Ohio. Between Jennifer Force, Geologist, and Mick Sturgel, Village of New Boston Engineering Department. September 13.

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APPENDIX

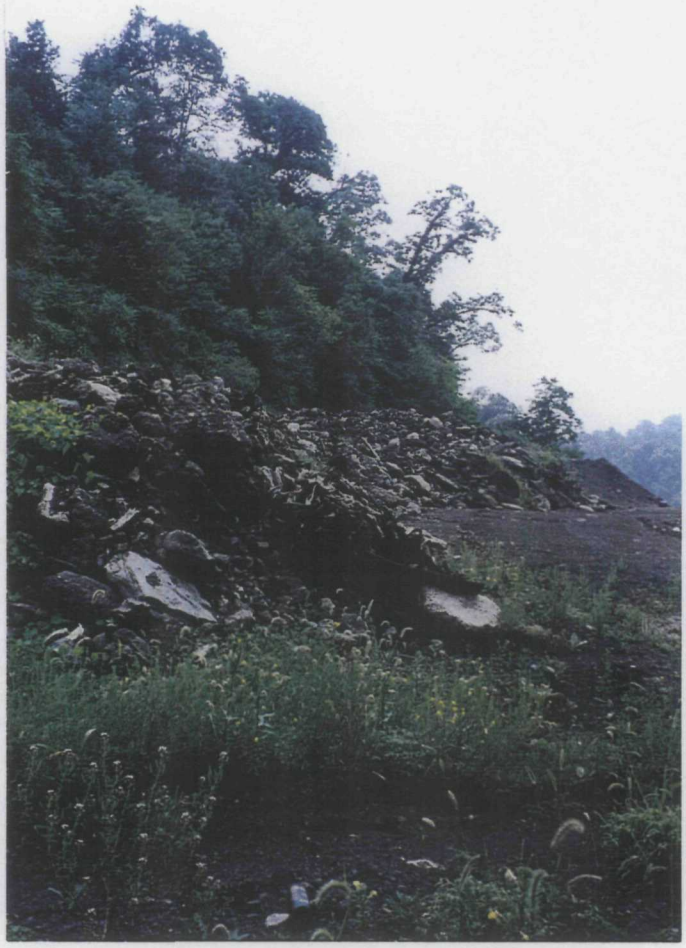
SITE RECONNAISSANCE PHOTOGRAPHS

EMPIRE-DETROIT STEEL, FOX HOLLOW
NEW BOSTON, SCIOTO COUNTY, OHIO

(Four Pages)

Photograph No. 1 Location: Empire-Detroit Steel, Fox Hollow (EDS), site
Orientation: Southeast Date: 08/28/95
Description: Construction debris pile on northern portion of the site

Photograph No. 2 Location: EDS site
Orientation: West Date: 08/28/95
Description: Slag pile in northern portion of site



Photograph No. 3 Location: EDS site
Orientation: North Date: 08/28/95
Description: Construction debris and scrap steel pile in northern portion of site

Photograph No. 4 Location: EDS site
Orientation: East Date: 08/28/95
Description: Construction debris pile in foreground and slag and scrap steel pile in background

Photograph No. 5 Location: EDS site
Orientation: South and downward Date: 08/28/95
Description: Storm sewer south of site which drains water collected under on-site scale

Photograph No. 6
Orientation: South
Description: Sieving equipment in central portion of site

Location: EDS site
Date: 08/28/95

ATTACHMENT

SCREENING SITE INSPECTION SOIL SAMPLING LOCATIONS AND ANALYTICAL RESULTS

EMPIRE-DETROIT STEEL, FOX HOLLOW NEW BOSTON, SCIOTO COUNTY, OHIO

(Four Pages)

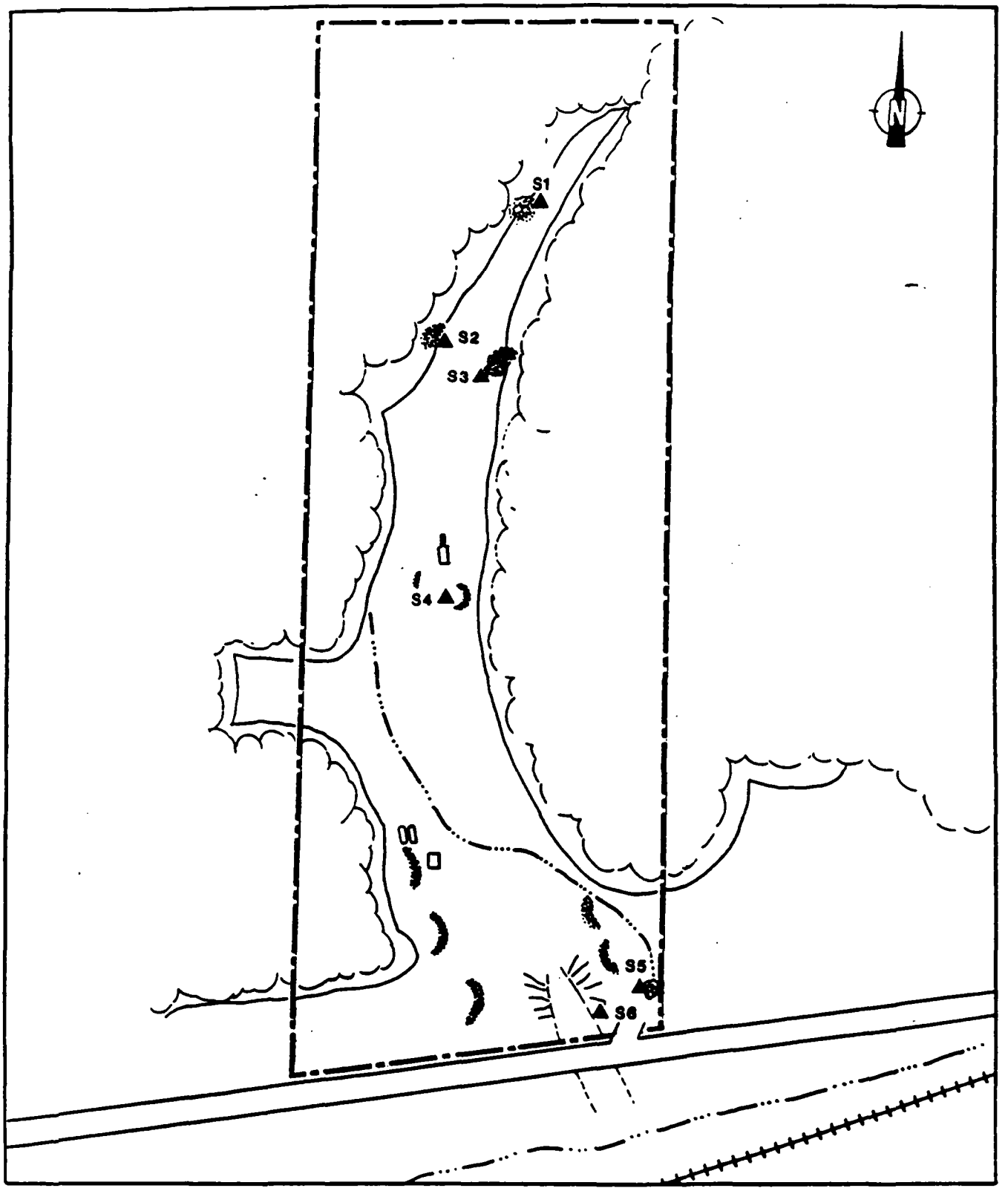
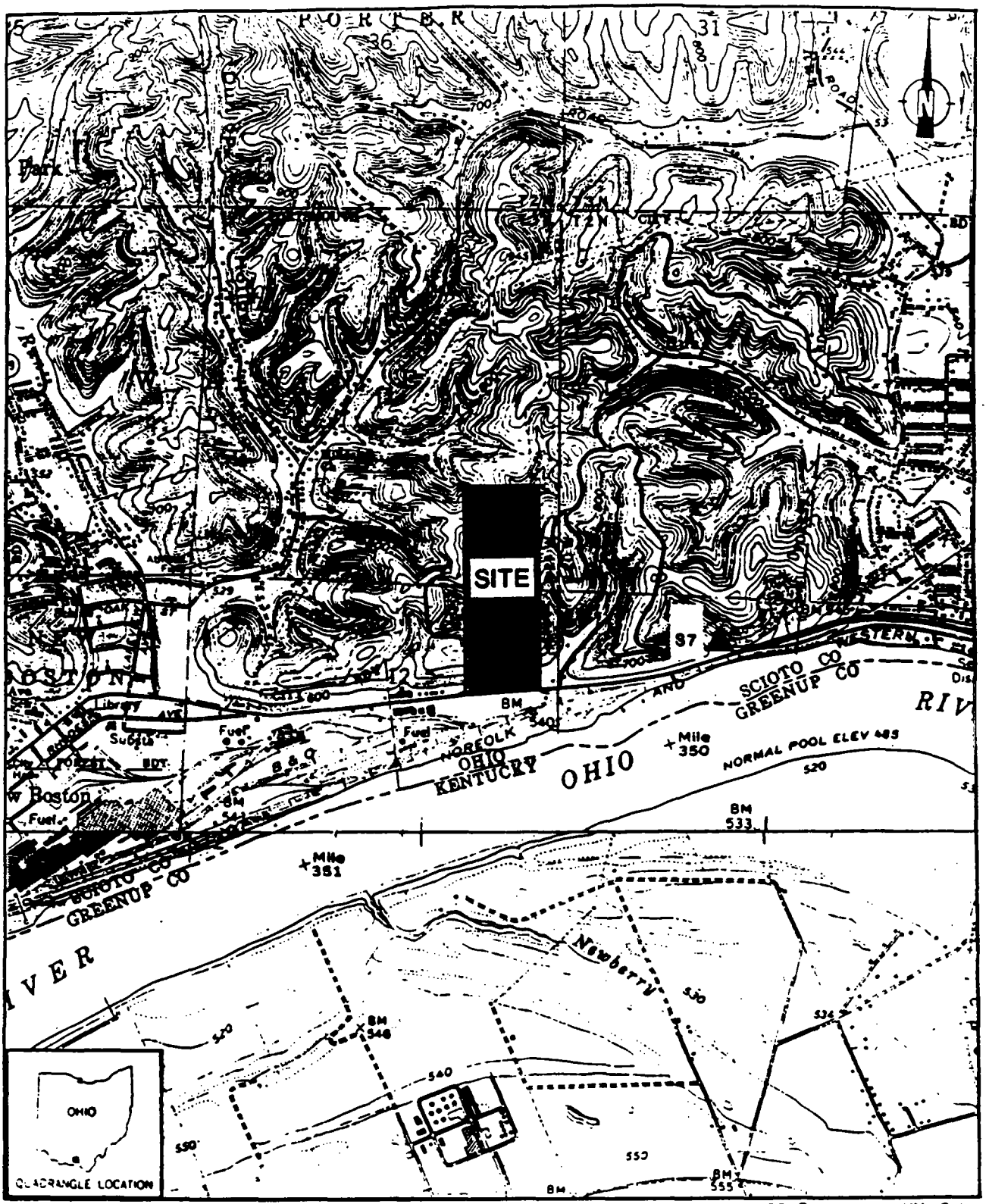


FIGURE 3-2 ON-SITE SOIL SAMPLING LOCATIONS



SOURCE: New Boston, OH-KY Quadrangle, 7.5 Minute Series, 1961, photorevised 1975; Portsmouth KY-OH Quadrangle, 7.5 Minute Series, 1968, photorevised 1975.

SCALE
0 ½ 1 MILE

FIGURE 3-3 OFF-SITE SOIL SAMPLING LOCATION

Table 4-1
RESULTS OF CHEMICAL ANALYSIS OF
FIT-COLLECTED SOIL SAMPLES

Sample Collection Information and Parameters	S1	S2	S3	S4	S5	S6	S7
Date	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90	11/29/90
Time	1305	1110	1145	1245	1315	1400	1355
CLP Organic Traffic Report Number	EL385	EL386	EH589	EH590	EH591	EH592	EH593
CLP Inorganic Traffic Report Number	MEFQ53	MEFQ54	MEFQ55	MEFQ56	MEFQ58	MEHF24	MEHF25
Compound Detected (values in ug/kg)							
Volatile Organics							
acetone	—	—	7 J	—	—	—	10 J
toluene	—	5 J	10	—	5 J	4 J	—
Semivolatile Organics							
naphthalene	—	210 J	—	—	1,400 J	880	—
2-methylnaphthalene	—	84 J	—	—	340 J	260 J	120 J
acenaphthylene	300 J	200 J	—	—	1,100 J	560	260 J
acenaphthene	—	60 J	—	—	170 J	110 J	130 J
dibenzofuran	—	120 J	—	—	660 J	390 J	170 J
fluorene	—	130 J	—	—	990 J	300 J	230 J
phenanthrene	2,900	1,100	—	—	6,500	2,400	2,000 J
anthracene	930 J	360 J	—	—	2,800	840	780 J
fluoranthene	12,000	2,600	67 J	1,700 J	14,000	4,200	5,200
pyrene	10,000 J	2,400	73 J	3,600 J	14,000	7,200	5,100
benzo[a]anthracene	4,300	1,800	—	—	8,600	3,900	3,400
chrysene	5,300	1,900	—	—	8,500	4,300	3,800
bis(2-ethylhexyl)phthalate	380 J	86 J	42 J	—	—	—	—
benzo[b]fluoranthene	5,100	2,500	—	—	7,300	5,500	2,900
benzo[k]fluoranthene	4,000	1,900	—	—	8,400	4,100	1,000 J
benzo[a]pyrene	4,700	2,200	—	—	7,700	4,500	3,600
indeno[1,2,3-cd]pyrene	—	2,200	—	—	6,200	4,100	2,600
benzo[g,h,i]perylene	2,600	1,900	—	—	5,500	4,600	2,300 J
Pesticides/PCBs							
Aldrin	—	—	—	—	27	20	—
Dieldrin	—	—	8.4 J	—	—	—	—
Endosulfan II	9.2 J	—	—	29	—	—	—
Endosulfan sulfate	—	—	—	—	130	—	—
4,4'-DDT	56 J	—	—	120 J	—	—	—
TICs+							
Benzo(b)naptho(2,1-d)thiophene,1-methyl (239-35-0)	—	—	—	—	1,000 J	—	—

— Not detected.

Table 4-1 (Cont.)

Sample Collection Information and Parameters	S1	S2	S3	S4	S5	S6	S7
Analyte Detected (values in mg/kg)							
aluminum	8,730	7,330	5,540	5,170	6,120	10,400	8,660
antimony	130 JN*	59.4 JN*	104 JN*	76.1 JN*	89.5 JN*	69.3 JN*	16.1 JN*
arsenic	22.6 JNs	10.3 JN	8.8 JN	5.3 JN	8.2 JNs	—	9.1 JN*
barium	198	88.7	94	110	127	215	41.2 B
beryllium	1.30	0.77 B	0.98 B	0.70 B	0.82 B	1.50 B	0.60 B
cadmium	9.40 JN	3.40 JN	3.10 JN	3.10 JN	3.80 JN	4.10 JN	0.53 BJN
calcium	67,800 EJ	60,900 EJ	54,200 EJ	48,700 EJ	74,100 EJ	156,000 EJ	3,760 EJ
chromium	1,040	199	398	460	783	290	16
cobalt	16.2	10.4 B	11.3	8.6 B	10.9 B	13.5 B	12.0 B
copper	755	53.6	63.8	60.1	51.7	85.6	17.4
iron	186,000	80,100	162,000	89,200	140,000	70,700	19,300
lead	401	280	257	231	245	556	41.8
magnesium	22,500	13,000	17,800	17,500	25,000	32,900	3,680
manganese	18,700	3,890	12,000	11,300	17,400	5,680	288
mercury	0.33	0.13	—	0.23	—	—	—
nickel	93.9	39.0	58.4	33.7	32.4	50.4	21.1
potassium	646 B	980 B	486 B	587 B	608 B	1,610 B	1,830
selenium	1.4 s	—	1.7 s	—	1.1 B	2.8 JN	—
silver	21.3 B	5.1 J	18.1 B	4.3 J	4.9 J	4.2 BJ	1.8 BJ
sodium	481 B	217 B	330 B	446 B	472 B	578 B	178 B
vanadium	439	64.5	136	187	229	138	20.4
zinc	1,040 EJ	1,280 EJ	502 EJ	407 EJ	623 EJ	883 EJ	90.8 EJ
cyanide	3.3	4.0	8.1	2.2	13.3	6.2	—

— Not detected.

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
E	Estimated or not reported due to interference. See laboratory narrative.	Analyte or element was not detected, or value may be semiquantitative.
s	Analysis by Method of Standard Additions.	Value is quantitative.
N	Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative.	Value may be quantitative or semi-quantitative.
*	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be quantitative or semiquantitative.
B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
J	Value is above CRDL and is an estimated value because of a QC protocol.	Value may be semiquantitative.
W	Post-digestion spike for furnace AA analysis is out of control limits (35-115%), while sample absorbance is <50% of spike absorbance.	Value may be semiquantitative.